Title	Retroperitoneoscopic ureteroureterostomy for retrocaval ureter
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RETROPERITONEOSCOPIC URETEROURETEROSTOMY FOR RETROCAVAL URETER

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A 10-year-old boy presented to our hospital with pain in the flank and was subsequently diagnosed as having a retrocaval ureter. He underwent retroperitoneoscopic surgery, during which the retrocaval segment of the right ureter was divided and reanastomosed anterior to the inferior vena cava using 5-0 polyglactin. He returned to normal activities from three days after the procedure. Hydronephrosis was markedly decreased on excretory urography at 6 months after surgery. To the best of our knowledge, this is the eighth case report on retroperitoneoscopic surgery for retrocaval ureter in the English and Japanese literature.

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Key words : Retroperitoneoscopy, Retrocaval ureter, Ureteroureterostomy

INTRODUCTION

Retrocaval ureter is a rare congenital anomaly that requires surgical correction in symptomatic patients. Before the laparoscopic era, open reanastomosis of either the ureter or vena cava was performed as the treatment of choice. We used a minimally invasive retroperitoneoscopic approach to correct this condition in a symptomatic individual with reasonably preserved renal function, and we report the case here with a review of the literature.

CASE REPORT

A 10-year-old boy presented to Nakagami Hospital with right flank pain, and abdominal ultrasonography revealed severe right hydronephrosis. The patient was 150 cm tall and weighed 37 kg. Serum creatinine was was 0.3 mg/dl and blood urea nitrogen was 16 mg/dl. Urinalysis was normal. Excretory urography (IVP) showed delayed excretion of contrast medium and an S-shaped curve of the right ureter (Fig. 1). Computed tomography (CT) during IVP confirmed the existence of a retrocaval ureter (Fig. 2).

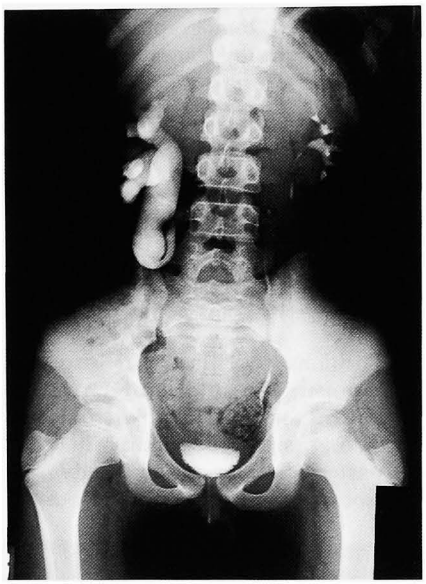

Fig. 1. Preoperative excretory urography demonstrates right hydronephrosis and an S-shaped curve of the ureter.

After the procedure and its potential risks were explained, informed consent was given for retroperitoneoscopic surgery and it was performed on 27 July, 2000. With the patient in the lithotomy position, a 6 Fr ureteral catheter was inserted as far as the renal pelvis under fluoroscopic guidance. Then the patient was placed in the left lateral decubitus position and a 2 cm incision was made just below the costal arch on the posterior axillary line. The muscles were split to expose the posterior retroperitoneum, which was mobilized medially using the index finger. Then a working space was created using a balloon dissector[1] A 12 mm blunt-tipped trocar was inserted through the skin incision and a pressure of 8 mmHg was maintained throughout the procedure. Three other ports were placed under direct vision, including a 12 mm port just above the iliac crest on the anterior axillary line, a 5 mm port on the posterior axillary line, and a 5 mm port just below the costal arch on the anterior axillary line (Fig. 3). Gerota's fascia was opened to expose the inferior vena cava. The ureter was found to override the vena cava and then run behind the vessel. The retrocaval portion was dissected free from the vena cava and the ureter was transected just above this segment, after which it was brought up anteriorly following removal of the ureteral catheter. A redundant segment of diseased ureter was excised for 2 cm distally and the

distal ureteral stump was spatulated over about 1 cm. After an initial stitch was placed, a tension-free anastomosis was fashioned using 6 interrupted 5-0 polyglactin sutures. Then a double-J ureteral stent was inserted. A closed-system suction drain was placed near the ureteral anastomosis. The procedure took 4 hours and 55 min and there was minimal blood loss. The patient was ambulant and oral intake was started from the day after surgery, while full recuperation was achieved within three days. There was no urine leakage and the drain was removed on day 5. The ureteral stent was removed 6 weeks later. IVP showed improvement of the right-sided hydronephrosis without any significant stenosis at 6 months after surgery (Fig. 4).

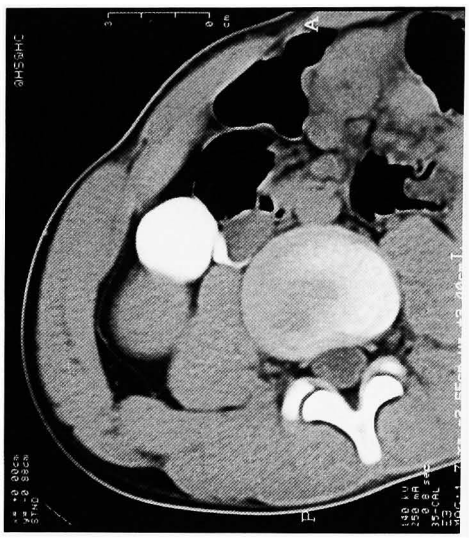

Fig. 2. Computed tomography during excretory urography shows the existence of a retrocaval ureter.

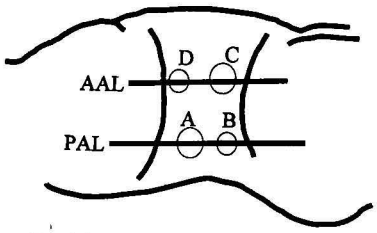

Fig. 3. Positions of the four trocars for retroperitoneoscopic surgery, with the patient in the left lateral position. AAL, anterior axillary line; PAL, posterior axillary line; A and C, 12 mm tsocars; B and D, 5 mm trocars.

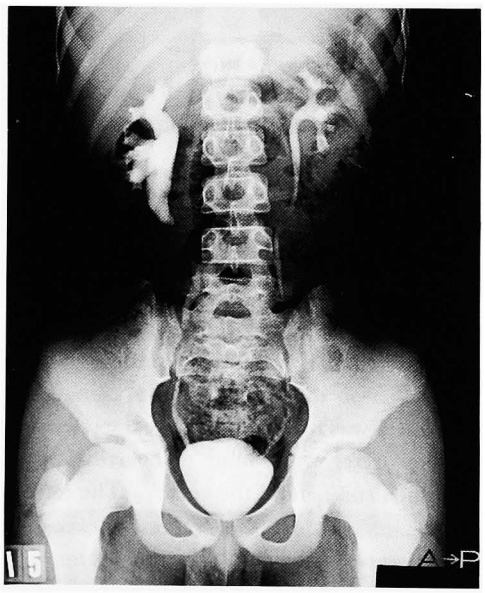

Fig. 4. Postoperative excretory urography shows improvement of the right-sided hydronephrosis without stricture.

DISCUSSION

Retrocaval ureter is a congenital anomaly that requires surgical correction in symptomatic patients with ureteral obstruction. Recently, laparoscopic surgery has been proposed for the correction of retrocaval ureter, and its usefulness and efficacy have been confirmed. Laparoscopy has several advantages over conventional open surgery, including decreased postoperative pain, a shorter hospital stay, a more rapid return to normal activities, and a more cosmetically acceptable surgical scar.

Matsuda et al. performed laparoscopic ureteroureterostomy using 5 laparoscopic ports and the procedure took 7.5 hours[2]. Baba et al. took 9.3 hours to perform dismembered pyeloplasty through 5 ports[3]. Ishitoya et al. converted the laparoscopic repair of a retrocaval ureter to open surgery because it required too much time[4]. The most difficult and time-consuming part of laparoscopic surgery is suture placement. Polascik et al. performed laparoscopic ureteroureterostomy in only 3 hours and 45 min using an automatic suturing device (Endo Stitch; Auto Suture, Norwalk, CT, USA)[5]. Thus improved laparoscopic suturing devices and techniques can compensate for this disadvantage.

The procedure was performed via a transperitoneal approach in all 4 cases mentioned above. In contrast, Gaur et al. performed first retroperitoneoscopic ureteroureterostomy over 5 hours using 4 ports and the patient was discharged on day 4[6] Mugiya et al. performed retroperitoneoscopic ureteroureterostomy over 5 hours using an automatic suturing device (Endo Stitch)[7]. Since them, there had been five successful retroperitoneoscopic ureteroureterostomies[8–12] Thus, our case is the eighth report of retroperitoneoscopic treatment for retrocaval ureter. Retroperitoneoscopic surgery seems to be superior to conventional transperitoneal laparoscopic surgery, because the transperitoneal approach has the potential risk of abdominal complications. Since the retroperitoneoscopic approach provides more direct and less invasive access to the diseased ureter, we highly recommend this procedure.

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和文抄録

下大静脈後尿管に対する後腹膜鏡下尿管尿管吻合術

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10歳，男児，右側腹部痛を主訴に当院受診し，IVP，CT にて下大静脈後尿管と診断された．2000年7月27日，後腹膜鏡下尿管尿管吻合術を施行した．12肋骨弓と腸骨陵とのあいだに4本のポートを作製し，5-0バイクリルで端々吻合を行った．術後経過は良好で，術後6カ月目の IVP でも水腎症は著明に改善し，症状も消失した．われわれの調べ得たかぎりでは，下大静脈後尿管に対する後腹膜鏡下尿管尿管吻合術は本症例が8例目である．

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